

# CALIFORNIA STATE DEPARTMENT OF PUBLIC HEALTH

J. D. DUNSHEE, M.D., Director

## Weekly Bulletin

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GUY P. JONES  
EDITOR

## *What Every Person Should Know About Milk*

(Continued from last issue)

Of course, if one of your milkers or other helpers contracted typhoid fever, you would at once have him quarantined or sent to a hospital; and if you were prompt and careful, there would probably be very little danger. But, unfortunately, that is not usually the way epidemics of typhoid fever are caused by milk. When milk becomes infected with typhoid fever it is usually not a sick person who is at fault, but, instead, a perfectly well individual, one who had had typhoid fever perhaps years ago and who possibly did not even know that what he had was typhoid fever. Nevertheless, he has, as a result of this possibly unrecognized sickness, become what is known as a typhoid carrier. Such a man is, so far as we know, a perfectly well individual. He doesn't look sick and he doesn't feel sick. But, unfortunately, he still carries typhoid fever germs, either in his gall bladder or elsewhere, from which they are discharged with his feces or urine, and thus accidentally now and then find their way to his hands, his clothing, and eventually to the dairy equipment and to the milk supply.

Of course, the typhoid-fever carrier is not aware of his condition. If he were, he would, in most cases, be honest enough to refuse to imperil the lives of his fellow beings by continuing to work at a dairy. But that is the dangerous thing about it. The typhoid carrier is usually ignorant of the fact that he is a menace, a carrier of disease and death.

Knowing these facts, then, what would you do if you were the owner of a raw-milk dairy? Possibly you would do what is required by the Public Health Service milk ordinance for grade A raw-milk employees who have at any previous time had typhoid fever. You would have everyone at your dairy send samples of their feces and urine to the health department laboratory so that it could be determined whether they contained any typhoid organisms. Fortunately scientists have discovered an excellent method of recognizing typhoid fever germs.

Now suppose you took this precaution and the laboratory reported that so far as it could determine none of the specimens of feces or urine contained the germs of typhoid fever. Could you then rest assured that none of your employees is a typhoid-fever carrier, and that none of your customers would ever contract typhoid fever from the milk you sold them?

Unfortunately, the answer must be no. Many typhoid-fever carriers do not discharge the typhoid-fever germs every day, and on the day the specimens were collected and sent to the laboratory the carrier, if there had been one at your dairy, may or may not have been discharging the organisms. If he was discharging them, the chance that the laboratory would find them is excellent; but if he was not discharging them the laboratory could not, of course, find them.

There is, therefore, no way to make absolutely sure that raw milk will never contain the germs of typhoid



fever; and if you knew as much about the danger as the health officer does, you, as a dairyman, would live constantly in fear lest some morning you awaken to find the newspapers pointing the finger of accusation at you and your milk supply.

We have now discussed two of the three diseases we intended to discuss.

How about the third—septic sore throat? What could you, if you were a producer of high-grade raw milk, do to prevent the transmission of this disease through your milk supply to your customers?

Frankly, I do not know. A milker may think he has an ordinary cold, when really it is septic sore throat. He may then infect the milk supply directly, or he may infect a cow's udder during the milking process, and the milk from that cow may later be simply teeming with the organisms of the disease.

Suppose we were to examine every milker's throat every day and every cow's udder every day. Even then we would not have done away with the danger, because by the time the report came back from the laboratory some of the milk would have been consumed. Of course, I need not tell you that a daily examination would be out of the question, if for no other reason than the expense entailed.

A septic sore throat outbreak can be very serious. In Portland, Oregon, several years ago, a milker infected a cow's udder; and before the resulting epidemic was quelled, 487 persons sickened and 22 died.

To repeat, I do not know of any way in which you could guarantee that septic sore throat would not be spread through your raw-milk supply.

It seems impossible, then, to escape the conclusion that all milk should be either pasteurized or boiled to make it safe.

Should we rely upon boiling? That is what is done in many parts of Europe and South America, and, as a result, they have in those places practically no milk-borne disease. But with these people boiling milk is a matter of daily habit. In most of the areas in question, the housewife does not have ice, and milk is boiled to keep it from souring.

In this country we have to deal with two factors: First, that most families do have ice or electric refrigerators and can keep milk sweet; and second, that many people do not like the taste of boiled milk.

If health officers simply said to all of the people, "Boil your milk," they could not depend upon a sufficient number doing it to prevent epidemics. Again, the adults and children who now drink raw milk because they like its flavor would not drink so much milk if it had to be boiled, and we must, by

all means, encourage people to drink enough milk. It is just as important to do this as it is to make milk safe.

There is, then, only one other thing we can do (short of putting chemicals into the milk, and nobody wants to do that), and that is to pasteurize the milk. That is why most health authorities today feel that *all* milk should be pasteurized. The most common method of pasteurizing milk commercially is to heat it to 142° F. and hold it at that temperature for 30 minutes. This treatment kills or renders harmless all disease organisms which may be transmitted through milk. Higher temperatures for shorter periods are also effective.

You need not be worried about the effect of heating milk upon its food value. The vast majority of health officers and physicians today believe that pasteurizing milk has no significant effect upon its food value, especially when it is remembered that all children should receive a supplementary diet in addition to milk. Vitamin C is affected by heat, but this is not significant, since the amount of this vitamin present even in raw milk is frequently insufficient, and it is therefore necessary to feed children orange or tomato juice or some other high-bearing source of vitamin C, regardless of whether the milk they drink is raw or pasteurized. Therefore, since the child will get all the vitamin C it needs anyway, why take a chance on disease by insisting upon giving it raw milk?

Several years ago the Public Health Service conducted an intensive study of about 3700 children to determine whether those who drank heated milk actually thrived less well than those who drank raw milk. The results of the studies showed that the average weight of the children receiving raw milk was 33.2 pounds, whereas the average weight of the children receiving heated milk was 33.6 pounds; also the average height of the children receiving raw milk was 37.4 inches, whereas the average height of the children receiving heated milk was 37.5 inches. Furthermore, from the parents' reports it was found that the children who drank raw milk suffered with communicable diseases more frequently than did the children who drank heated milk only. The final conclusion of the study was that, taking into account the average supplementary American child diet, children who are fed pasteurized or other heated milk thrive as well as children who are fed raw milk, and contract certain communicable diseases less frequently.

"But," you may say, "many people do not like the flavor of pasteurized milk, and I am one of them."

That may be quite true; but it is true only when



a low grade, unclean milk is used for pasteurization or when a high grade milk is improperly pasteurized. Pasteurization will not remove the bad flavor from bad milk, and even good milk can be damaged by pasteurizing it improperly. But if high-grade milk is properly pasteurized, there is no change in the flavor. To prove this, your health officer may conduct the following demonstration:

He should satisfy himself that the local pasteurization plants are strictly observing the grade A requirements and that there is no real flavor difference, such as might result from the use of a higher pasteurizing temperature than is required or from exposure of the milk to copper. Then one of the local pasteurization plants may furnish both raw and pasteurized milk in quart bottles to the Rotary and other civic luncheons, the bottles being marked with distinguishing marks unknown to the drinkers. Each member should be provided with six glasses, placed in a row in front of him. A small portion of pasteurized milk should be placed in 3 of the glasses and a small portion of raw milk in the other 3 in an order unknown to anyone but the health officer. The members should not be told how many glasses contain pasteurized milk. Then each member should be asked to tell by tasting which of the six glasses contain pasteurized milk. (It is fundamentally important that the raw and pasteurized milk be identically the same milk, except for the fact of pasteurization. This condition is accomplished best by obtaining the raw milk directly from the pasteurizer just prior to the pasteurization process, after thorough mixing, and then obtaining the pasteurized milk from the same batch of milk.)

Each guest should be provided with a small card. The glasses should be considered as being numbered from left to right and each guest should be asked to write on the card the numbers representing the glasses containing pasteurized milk. Then someone from the speaker's table should announce the true content of each of the six glasses, and all of the members who guess correctly may be awarded a prize of some sort.

If pasteurization really imparted an undesirable flavor to milk, most of the guests should give correct answers for all six glasses. If pasteurized milk really can not be detected by flavor, most of the members should fail in reporting all six glasses correctly. In tabulating the answers, each guest who fails to report all six glasses correctly should be listed as "wrong." A very few may guess correctly just by chance. This chance is the same as that of throwing all 6 heads when pitching 6 pennies at a time, usually not more than 1 or 2 times in 100 throws ( $p=0.0156$ ).

After this guessing contest has been tried upon at

least 100 persons in the city, the results may be published in the newspapers as evidence of the fact that proper pasteurization really does not affect the flavor of milk.

Of course we should not rely upon pasteurization as a cure-all and neglect all precautions at the farm, even if the flavor problem did not exist. The pasteurization process is operated by human beings and therefore is not entirely foolproof, though it is nearly so. We should firmly insist that the milk we drink be not only properly pasteurized but also carefully produced, so that we will have the maximum practicable protection all along the line from the cow to the consumer.

(3) *How can consumers be certain that the milk they drink has been thus safeguarded?*

As above stated, milk which has been properly safeguarded must have been both carefully produced and properly pasteurized. Is the milk you buy such milk? The first thing you must know before you can be sure of this is whether the milk regulations in force in your city correctly prescribe the methods of production and pasteurization. There has been much disagreement on this point among health officers in the past, and obviously not all health officers have been correct. In some cities the milk is not carefully produced before pasteurization, and in others important pasteurization principles are ignored or faulty pasteurization machines used, and yet the milk may be sold as grade A or otherwise designated as safe.

To remedy this situation the Public Health Service has for a number of years been urging American States and cities to adopt one uniform system of effective control. The model uniform regulations are carefully reviewed annually by a National Advisory Board, composed of 11 experts in milk-control work.

Under the regulations approved by this board, grade A pasteurized milk is milk which has been both carefully produced and properly pasteurized and is as safe as any milk can be made. Grade A raw and certified milks are raw milks which are as safe as *any raw milk* can practicably be made. If you prefer to buy either of these raw grades, you can secure the added protection of pasteurization at home as follows: Place the milk in an aluminum vessel on a hot flame and heat to 155° F., stirring constantly; then immediately set the vessel in cold water and continue stirring until cool.

If you buy grade A pasteurized milk, however, no additional home treatment is necessary.

(Continued in next issue)

The methods of quackery are merely a theft from the most ancient phases of folk-medicine.—Sudhoff.



**MORBIDITY****Complete Reports for Following Diseases for Week Ending  
December 22, 1934.****Chickenpox**

247 cases: Oakland 15, Fresno County 6, Fresno 3, Eureka 10, Kern County 2, Bakersfield 6, Los Angeles County 11, Arcadia 1, Burbank 7, Inglewood 1, Long Beach 5, Los Angeles 36, Pasadena 3, Pomona 5, Santa Monica 1, Merced County 2, Carmel 1, Orange County 2, Brea 1, Huntington Beach 6, La Habra 1, Riverside County 1, Riverside 7, Sacramento 25, San Diego 27, San Francisco 17, San Joaquin County 14, Stockton 3, Lompoc 1, Santa Maria 5, Santa Clara County 2, Palo Alto 2, San Jose 4, Vallejo 1, Dinuba 1, Exeter 1, Ventura County 8, Santa Paula 1, Yolo County 2.

**Diphtheria**

49 cases: Alameda County 1, Colusa 1, Imperial County 1, Los Angeles County 1, Alhambra 1, Hermosa 1, Long Beach 1, Los Angeles 19, Redondo 2, Torrance 1, Anaheim 1, Santa Ana 1, Placentia 1, Riverside County 3, Riverside 3, Sacramento County 1, Sacramento 1, San Diego 2, Stockton 2, San Jose 1, Santa Cruz 1, Tulare 1, Santa Paula 2.

**German Measles**

20 cases: Berkeley 2, El Dorado County 1, Los Angeles County 3, Long Beach 2, Los Angeles 1, Santa Monica 2, Maywood 1, Bell 1, Santa Ana 1, San Francisco 1, Lodi 1, Stockton 1, Willow Glen 1, Santa Cruz County 1, Redding 1.

**Influenza**

46 cases: Kern County 1, Lake County 5, Los Angeles County 1, Los Angeles 25, Pasadena 4, South Gate 1, Anaheim 1, San Francisco 6, South San Francisco 1, Tuolumne County 1.

**Malaria.**

One case: San Joaquin County.

**Measles**

140 cases: Alameda 1, Berkeley 2, Oakland 2, Fresno County 6, Eureka 7, Bakersfield 1, Los Angeles County 2, Los Angeles 9, Pasadena 1, Marin County 1, Monterey County 1, Orange County 2, Anaheim 1, Orange 1, Riverside County 1, San Francisco 4, San Joaquin County 5, Stockton 42, Santa Barbara County 3, Santa Maria 15, Santa Clara County 4, San Jose 2, Santa Cruz 18, Tulare County 2, Exeter 2, Santa Paula 4, Yolo County 1.

**Mumps**

85 cases: Alameda County 4, Hayward 5, Oakland 3, Pittsburg 1, Fresno County 2, Fresno 1, Burbank 8, Glendale 1, Long Beach 1, Los Angeles 2, South Gate 1, Placentia 4, San Bernardino County 1, San Diego 1, San Francisco 6, San Joaquin County 1, Lodi 15, Stockton 2, Tracy 1, San Luis Obispo County 1, Arroyo Grande 2, Santa Barbara County 6, Santa Maria 10, Modesto 3, Tulare County 1, Tuolumne County 1, Santa Paula 1.

**Pneumonia (Lobar)**

46 cases: Alameda County 1, Antioch 2, Fresno County 1, Kern County 1, Bakersfield 1, Los Angeles County 4, Azusa 1, Inglewood 1, Long Beach 1, Los Angeles 8, Pasadena 1, South Gate 1, Merced County 1, Riverside County 1, Riverside 3, Sacramento 3, San Diego 3, San Francisco 6, Hillsborough 1, San Mateo 1, Santa Barbara County 1, San Jose 2, Tulare County 1.

**Scarlet Fever**

218 cases: Alameda County 1, Alameda 2, Berkeley 1, Oakland 5, Amador County 1, Jackson 2, Biggs 1, Chico 1, Colusa County 1, Contra Costa County 2, Hercules 1, Fresno County 2, Fresno 1, Reedley 1, Eureka 2, El Centro 1, Kern County 3, Hanford 1, Lake County 2, Los Angeles County 23, Alhambra 1, Compton 1, Culver City 1, Glendale 6, Inglewood 1, La Verne 4, Long Beach 6, Los Angeles 38, Manhattan 2, Pasadena 3, Redondo 2, San Marino 1, South Pasadena 3, Whittier 1, Torrance 1, South Gate 3, Madera County 1, Orange County 2, Newport Beach 1, Orange 1, Santa Ana 5, Placer County 1, Riverside County 5, Sacramento 3, San Bernardino County 1, Chino 2, Ontario 1, San Diego 11, San Francisco 15, San Joaquin County 5, Lodi 1, Stockton 1, San Carlos 1, Santa Barbara County 4, Lompoc 1, Santa Maria 1, Santa Clara County 3, Los Gatos 1, San Jose 7, Santa Cruz 1, Vallejo 2, Sutter County 1, Tulare County 2, Dinuba 1, Tuolumne County 1, Sonora 1, Fillmore 1, Yolo County 2, Yuba County 3, Marysville 1.

**Smallpox**

9 cases: Los Angeles.

**Typhoid Fever**

10 cases: Imperial County 1, Kern County 1, Long Beach 3, Sacramento County 1, San Juan Bautista 1, Santa Cruz County 1, Suisun 1, Tulare County 1.

**Whooping Cough**

62 cases: Alameda County 2, Berkeley 1, Contra Costa County 1, Fresno 6, Los Angeles County 4, Burbank 2, Glendale 1, Los Angeles 4, Fairfax 1, Santa Ana 4, San Diego 10, San

Francisco 15, Stockton 2, San Luis Obispo 2, Santa Barbara County 2, Lompoc 2, Santa Maria 3.

**Meningitis (Epidemic)**

2 cases: San Joaquin County 1, San Jose 1.

**Dysentery (Amoebic)**

2 cases: Fresno County 1, Fresno 1.

**Dysentery (Bacillary)**

One case: San Mateo.

**Leprosy**

2 cases: Sacramento.

**Ophthalmia Neonatorum**

One case: San Francisco

**Poliomyelitis**

9 cases: Imperial County 1, Kern County 1, Beverly Hills 1, Long Beach 1, Los Angeles 2, Sacramento County 2, Yolo County 1.

**Tetanus**

One case: Tulare County.

**Paratyphoid Fever**

One case: Sacramento.

**Food Poisoning**

3 cases: San Francisco.

**Undulant Fever**

6 cases: Holtville 1, Kern County 1, Los Angeles County 1, Fullerton 1, South San Francisco 1, Watsonville 1.

**Septic Sore Throat (Epidemic)**

2 cases: Pasadena 1, San Bruno 1.

**Rabies (Animal)**

19 cases: Los Angeles County 3, Inglewood 1, Los Angeles 5, Torrance 1, Monterey County 3, Sacramento 1, San Diego 4, Stockton 1.

**CEMETERY SEXTON CONVICTED**

Early in November an undertaker from an adjoining county secured the removal of a dead body from a cemetery in Los Angeles County without securing the necessary removal permit. This violation of law was reported to the State Department of Public Health by Doctor J. L. Pomeroy, Health Officer of Los Angeles County. In compliance with the provisions of the law the director of the department referred the matter to the district attorney of Los Angeles for prosecution.

Mr. Carl R. Williams, Chief Quarantine Officer of the Los Angeles Department of Health, cooperated with the district attorney, and December 6th filed a complaint against the man who was acting as sexton of the cemetery at the time of the offense. He entered a plea of guilty and was fined \$10.

This conviction should convince both undertakers and sextons of cemeteries that the Vital Statistics Registration Law must be respected and that such individuals who persist in violating its provisions will be prosecuted and every effort will be made to secure their conviction in the court.

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